

Claims

[c1] BUR920030144US1

1. A voltage controlled oscillator circuit, comprising:
a drive circuit;
an inductor/capacitor (LC) tank circuit, the LC tank circuit and the drive circuit collectively comprising a first oscillating node and a second oscillating node, the first oscillating node being adapted to have a first voltage, the second oscillating node being adapted to have a second voltage; and
a diode adapted to control an amplitude of the first voltage and an amplitude of the second voltage.

[c2] 2. The voltage controlled oscillator circuit of claim 1, wherein the diode comprises a field effect transistor (FET) with a gate electrically shorted to a drain.

[c3] 3. The voltage controlled oscillator circuit of claim 2, wherein the FET is an n-channel FET (NFET).

[c4] 4. The voltage controlled oscillator circuit of claim 1, wherein the diode is adapted to maintain an amplitude of the first voltage that is about constant over time and an amplitude of the second voltage that is about con-

stant over time.

- [c5] 5. The voltage controlled oscillator circuit of claim 1, wherein the diode is electrically connected to the LC tank circuit and the drive circuit.
- [c6] 6. The voltage controlled oscillator circuit of claim 5, wherein the diode is adapted to limit the amplitude of the first voltage to within a range between a supply voltage of the voltage controlled oscillator circuit and a ground voltage, and wherein the diode is adapted to limit the amplitude of the second voltage to within a range between the supply voltage of the voltage controlled oscillator circuit and the ground voltage.
- [c7] 7. The voltage controlled oscillator circuit of claim 6, wherein the diode is adapted to increase the amplitude of the first voltage, and wherein the diode is adapted to increase the amplitude of the second voltage.
- [c8] 8. The voltage controlled oscillator circuit of claim 6, wherein the diode is adapted to decrease the amplitude of the first voltage, and wherein the diode is adapted to decrease the amplitude of the second voltage.
- [c9] 9. The voltage controlled oscillator circuit of claim 6, further comprising a current source adapted to provide a shared current flow for the LC tank circuit, the drive cir-

cuit, and the diode, wherein the diode is adapted shunt a portion of the current flow away from the LC tank circuit through the diode to ground.

[c10] 10. The voltage controlled oscillator circuit of claim 1, further comprising a comparator adapted to compare the first voltage to the second voltage, wherein the voltage controlled oscillator circuit is within a phase-locked loop circuit, and wherein the comparator is further adapted to provide an output signal that tracks a phase and frequency of a reference signal for the phase-locked loop circuit.

[c11] 11. A method, comprising:
providing a drive circuit, an inductor/capacitance (LC) tank circuit, and a diode within a voltage controlled oscillator circuit, the drive circuit and LC tank circuit collectively comprising a first oscillating node and a second oscillating node; and
controlling by the diode, an amplitude of a first voltage at the first oscillating node and an amplitude of a second voltage at the second oscillating node.

[c12] 12. The method claim 11, further comprising electrically shorting a gate of a field effect transistor FET to a drain of the FET such that the FET functions as the diode.

- [c13] 13. The method of claim 12, wherein the FET is an n-channel FET (NFET).
- [c14] 14. The method of claim 11, further comprising maintaining by the diode, an amplitude of the first voltage that is about constant over time and an amplitude of the second voltage that is about constant over time.
- [c15] 15. The method of claim 11, further comprising electrically connecting the diode to the LC tank circuit and the drive circuit.
- [c16] 16. The method of claim 15, further comprising:
limiting by the diode, a range of the amplitude of the first voltage between a supply voltage of the voltage controlled oscillator circuit and a ground voltage; and
limiting by the diode, a range of the amplitude of the second voltage between the supply voltage of the voltage controlled oscillator circuit and the ground voltage.
- [c17] 17. The method of claim 16, further comprising:
increasing by the diode, the amplitude of the first voltage; and
increasing by the diode, the amplitude of the second voltage.
- [c18] 18. The method of claim 16, further comprising:
decreasing by the FET, the amplitude of the first voltage;

and

decreasing by the FET, the amplitude of the second voltage.

- [c19] 19. The method of claim 16, further comprising:
providing a current source; and
providing by the current source, a shared current flow for the LC tank circuit, the drive circuit, and the diode, wherein said limiting by the diode comprises shunting by the diode, a portion of the current flow away from the LC tank circuit and the drive circuit through the diode to ground.
- [c20] 20. The method of claim 11, further comprising:
providing a comparator within the voltage controlled oscillator, wherein the voltage controlled oscillator circuit is within a phase-locked loop circuit;
comparing by the comparator, the first voltage to the second voltage; and
providing by the comparator, an output signal that tracks a phase and frequency of a reference signal for the phase-locked loop circuit.